



Output Summary

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Released to the following HTRI Member Company:

RELIANCE INDUSTRIES LIMITED

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Xphe Ver. 6.00 6/26/2018 14:55 SN: 1500214153

MKH Units

Rating - Single Pass Countercurrent Flow

1 See Data Check Messages Report for Warning Messages.

2 See Runtime Message Report for Warning Messages.

| Process Conditions | | Hotside | | Coldside | |
|-------------------------------------|----------------|---------|----------|----------|----------|
| Fluid name | | | | | |
| Flow rate | (1000-kg/hr) | | 741.000 | | 704.000 |
| Temperature, Inlet/Outlet | (Deg C) | 61.20 | 49.80 | 33.00 | 45.00 |
| Weight fraction vapor, Inlet/Outlet | (--) | 0.00 | 0.00 | 0.00 | 0.00 |
| Temperature, Average/Skin | (Deg C) | 55.50 | 51.28 | 39.00 | 43.80 |
| Pressure, Inlet/Average | (kgf/cm2A) | 0.256 | 0.128 | 0.231 | 0.115 |
| Pressure drop, Total/Allow | (kgf/cm2) | 0.256 | 0.128 | 0.231 | 0.115 |
| Nominal channel velocity | (m/s) | | 0.83 | | 0.79 |
| Fouling resistance | (m2-hr-C/kcal) | | 2.000e-5 | | 2.000e-5 |
| Equivalent shear stress | (Pa) | | 171.05 | | 164.05 |
| Maldistribution parameter | (--) | | 0.32 | | 0.30 |

| Exchanger Performance | | | | | |
|-----------------------|----------------|---------|------------|----------------|----------|
| Hot film coefficient | (kcal/m2-hr-C) | 20613.3 | Actual U | (kcal/m2-hr-C) | 5294.928 |
| Cold film coefficient | (kcal/m2-hr-C) | 18053.7 | Required U | (kcal/m2-hr-C) | 4560.544 |
| Hot regime | Sens. Liquid | | Duty | (MM kcal/hr) | 8.442 |
| Cold regime | Sens. Liquid | | Area | (m2) | 112.460 |
| EMTD | (Deg C) | 16.5 | Overdesign | (%) | 16.10 |

| Unit Geometry | | | Pack Configuration | | |
|--------------------------|------|----------------|--------------------|-----|--|
| Units in series/parallel | (--) | 1 / 1 | Group # | 1 | |
| No. of passes, hot/cold | (--) | 1 / 1 | Plate Type 1 | 1 | |
| Total plates/channels | (--) | 227 / 226 | Plate Type 2 | 1 | |
| Flow configuration | (--) | Countercurrent | Channels | 113 | |
| Inlet port locations | (--) | Same Side | Hot pass # | 1 | |
| Flow path | (--) | Parallel | Cold pass # | 1 | |
| Hot inlet flow direction | (--) | Upflow | Channel (Per pass) | 113 | |

| Plate Geometry | | | Plate Type 1 | | |
|-----------------------|------|---------|---------------|-------|------------|
| Channel width | (mm) | 577.60 | Manufacturer | (--) | Alfa Laval |
| Channel spacing | (mm) | 3.851 | Plate ID | (--) | AK20 |
| Equivalent diameter | (mm) | 6.418 | Chevron angle | (deg) | 60.00 |
| Average plate pitch | (mm) | 4.451 | | | |
| Port diameter | (mm) | 199.90 | Plate Type 2 | | |
| Tightened pack length | (mm) | 1006.45 | Manufacturer | (--) | |
| Horizontal port c-c | (mm) | 365.00 | Plate ID | (--) | |
| Vertical port c-c | (mm) | 929.90 | Chevron angle | (deg) | |

| Port Velocities, m/s | | | Pressure Drop, % of Total | | | Thermal Resistance, % | |
|----------------------|------|------|---------------------------|-------|-------|-----------------------|-------|
| | Hot | Cold | | Hot | Cold | Hot side | 25.69 |
| Inlet | 6.68 | 6.27 | Channel | 100.0 | 100.0 | Cold side | 29.33 |
| Outlet | 6.65 | 6.30 | Other | 0.0 | 0.0 | Fouling | 21.19 |
| | | | | | | Metal | 23.79 |